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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,951	09/23/2003	Roman Skuratowicz	16291-404	3314

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EXAMINER

WHITE, EVERETT NMN

ART UNIT	PAPER NUMBER
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1623

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/668,951	Applicant(s) SKURATOWICZ, ROMAN	
	Examiner EVERETT WHITE	Art Unit 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>Dec. 10, 2003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, line 6, the metes and bounds of the term "about simultaneously" cannot be determined which renders the claim indefinite. The term appears to include separation of the hemicellulose immediately after the precipitation procedure. Claims 2 to 17 are also rejected for the same reason since these claims are dependent from Claim 1 and do not clarify the exact meaning of the term "about simultaneously".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-7, 10, 11 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Sihtola (US Patent No. 3,935,022).

Applicant claims a process for separating purified hemicellulose from caustic liquor from alkali extraction of hemicellulose from fiber comprising the steps of adding alcohol to the caustic liquor to precipitate the hemicellulose so that the hemicellulose floats on top of the caustic liquor and density separation of the floating hemicellulose precipitate from the caustic liquor simultaneously or about simultaneously with the precipitation of the hemicellulose. Additional limitations disclosed in the dependent claims include separating cellulose and cellulose-hemicellulose complexes from the

Art Unit: 1623

caustic liquor, an alcohol to water ratio of about 1:1 to about 20:1, using specific alcohols, using a specific density separator, and using a specific alkali metal hydroxide. Claim 14 is drawn to a purified hemicellulose obtained by the process of Claim 1. Claim 15 is drawn to purified forms of cellulose and a cellulose-hemicellulose complex obtained by the process of Claim 2.

The Sihtola patent discloses a process for precipitating hemicellulose in Example 1, wherein the process involves dissolved pulp comprising alpha cellulose being mercerized utilizing a NaOH solution containing NaOH and hemicellulose. A press liquor was recovered. The example disclosed that ethanol was added to this press liquor and the precipitate formed was separated from the solution by centrifugation at a rotation speed of 2000 rpm. Example 4 of the Sihtola patent was also noted which discloses a process wherein a steeping liquor was obtained which comprises a NaOH content of 18.4% by weight and 51.8 g/l of hemicellulose. Example 4 sets forth that in the precipitation experiments the steeping liquor:ethanol ratios were as follows: 2:1, 1.5:1, 1:1, 1:1.5 and 1:2. Example 4 discloses that the hemicellulose precipitated was removed from the mother liquor by centrifugation at a rotation speed of 2000 rpm. The ratio of the steeping liquor to ethanol cited in Example 4 of the Sihtola patent covers the alcohol to water ratio of 1:1 to 20:1 as set forth in instant Claim 3. Also see column 2, last paragraph, wherein Sihtola discloses that separation of the precipitate from the caustic liquor thereof results in the recovery of substantially purified caustic liquor, which anticipate the subject matter of instant Claims 2 and 15. Since the starting materials used in the Sihtola patent are identical to the starting materials recited in the instant claims, it is assumed that the hemicellulose precipitated in the Sihtola patent floats on top of the caustic liquor as recited in instant Claim 1 and is separated immediately after being precipitated, which is within the scope of the terminology set forth in instant Claim 1 wherein the "density separation of the floating hemicellulose precipitate from the caustic liquor is about simultaneously with the precipitation of the hemicellulose". The description set forth in Examples 1 and 4 of the Sihtola patent anticipates the process disclosed in Claims 1-3, 5-7, 10, 11 and 14-16 of the instant application.

Art Unit: 1623

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sihtola (US Patent No. 3,935,022).

Applicant claims a process for separating purified hemicellulose from caustic liquor from alkali extraction of hemicellulose from fiber comprising the steps of adding alcohol to the caustic liquor to precipitate the hemicellulose so that the hemicellulose floats on top of the caustic liquor and density separation of the floating hemicellulose precipitate from the caustic liquor simultaneously or about simultaneously with the precipitation of the hemicellulose. Additional limitations disclosed in the dependent claims include separating cellulose and cellulose-hemicellulose complexes from the caustic liquor, an alcohol to water ratio of about 1:1 to about 20:1, the use of specific alcohols, using a specific density separator, using a specific alkali metal hydroxide, and the process comprising the additional step of adding peroxide. Claim 14 is drawn to a purified hemicellulose obtained by the process of Claim 1. Claim 15 is drawn to purified forms of cellulose and a cellulose-hemicellulose complex obtained by the process of Claim 2.

The Sihtola patent discloses a process for precipitating hemicellulose in Example 1, wherein the process involves dissolved pulp comprising alpha cellulose being mercerized utilizing a NaOH solution containing NaOH and hemicellulose. A press liquor was recovered. The example disclosed that ethanol was added to this press liquor and the precipitate formed was separated from the solution by centrifugation at a rotation speed of 2000 rpm. Example 4 of the Sihtola patent was also noted which discloses a process wherein a steeping liquor was obtained which comprises a NaOH content of 18.4% by weight and 51.8 g/l of hemicellulose. Example 4 sets forth that in the precipitation experiments the steeping liquor:ethanol ratios were as follows: 2:1, 1.5:1, 1:1, 1:1.5 and 1:2. Example 4 discloses that the hemicellulose precipitated was removed from the mother liquor by centrifugation at a rotation speed of 2000 rpm. The ratio of the steeping liquor to ethanol cited in Example 4 of the Sihtola patent covers the alcohol to water ratio of 1:1 to 20:1 as set forth in instant Claim 3. Also see column 2, last paragraph, wherein Sihtola discloses that separation of the precipitate from the caustic liquor thereof results in the recovery of substantially purified caustic liquor, which embraces the subject matter of instant Claim 2. Since the starting materials used in the Sihtola patent are identical to the starting materials recited in the instant claims, it is assumed that the hemicellulose precipitated in the Sihtola patent floats on top of the caustic liquor as recited in instant Claim 1 and is separated immediately after being precipitated, which embraces the terminology set forth in instant Claim 1 wherein the "density separation of the floating hemicellulose precipitate from the caustic liquor is about simultaneously with the precipitation of the hemicellulose". The process of the instant claims differs from the process of the Sihtola patent by claiming the additional step of adding peroxide. However, the Greenshields patent shows that the addition of peroxide to a preparation comprising hemicellulose is well known in the art. On page 1, last paragraph, the Greenshields patent discloses a method of producing a gel material which involves providing an aqueous soluble hemicellulosic starting medium; extracting said starting material with a non-acidic aqueous reagent which is preferably alkalies such as NaOH and KOH (see column 2, last paragraph); and reacting the extracted

Art Unit: 1623

material with an oxidizing system comprising at least one peroxide, together with at least one oxygenase.

One of ordinary skill in this art would be motivated to combine the teachings of the Sihtola patent with the teachings of the Greenshields patent since both references disclose preparation of hemicellulose involving extraction and precipitation of a hemicellulose containing material. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add to the process for the preparation of hemicellulose in the Sihtola patent an additional step that involves adding peroxide in view of the recognition in the art, as evidenced by the Greenshields patent, such a step is effective for obtaining a gel product.

Summary

7. All the claims are rejected.

Examiner's Telephone Number, Fax Number, and Other Information

8. For 24 hour access to patent application information 7 days per week, or for filing applications, please visit our website at www.uspto.gov and click on the button "Patent Electronic Business Center" for more information.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is (571) 272-0660. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson, can be reached on (571) 272-0661. The fax phone number for this Group is (703) 872-9306.

Art Unit: 1623

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.


E. White


James O. Wilson
Supervisory Primary Examiner
Technology Center 1600